REMARKS/ARGUMENTS

This is in response to an Office action (final rejection) dated 11/29/2005.

Status
Claims 10-29 are pending
Claims 11, 12, 14, 17, 21-25 and 27-29 are allowed
Claims 10, 13, 15-16, 18-20, 26 are rejected

Claim Objections
Rejection(s) under 35 USC §112

Claim 26 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In **claim 17**, the reduced dielectric constant greater than 3.85, but **claim 26** recites that the dielectric constant is less than 3.85, both statements can not be true.

This objection is addressed by the present Amendment (after final).

Rejection(s) under 35 USC §103

Claims 10, 13, 15-16 and 18-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yu (U.S. Patent No. 6,297,115, dated 10/2/2001) in view of Yu (U.S. Patent No. 6,194,748, dated 2/27/2001). The Examiner notes that ....

> Yu (115) shows the method substantially as claimed in Figs. 5-7 and corresponding text as: depositing a dielectric material (32) (col. 4, lines 20-29); etching the dielectric material to form a spacer (32)(col. 4, lines 20-29); and depositing a thin layer (52) over the dielectric material (col. 5, line 62-col. 6, line 13) (claim 10). Yu (115) teaches that the thin layer comprises oxide (col. 5, line 62-col. 6, line 13) (claim 19).
>
> Yu (115) shows the method substantially as claimed and as described in the preceding paragraph.
>
> Additionally, Yu teaches: the spacer, further comprising depositing a thin layer on the spacer to prevent moisture absorption (oxide layers formed over structures are use to prevent moisture absorption)(col 5, line 62-col. 6, line 13) (claim 18).
>
> Yu (115) lacks anticipation only in not explicitly teaching that: 1) forming pores in the dielectric material; and depositing a thin layer over the porous dielectric material (claim 10); 2) the spacer comprise a Si-O-C-N type of low-k material (claim 13); 3) the spacer has a reduced dielectric constant (k) (claim 15); 4) the reduced dielectric constant (k) is less than 3.85 (claim 16); and 5) the spacer is porous, and further comprising depositing a

thin layer on the spacer to prevent moisture absorption (claim 18).

Yu (748) shows a MOSFET with porous sidewall spacers. Vu shows a spacer (38) that is formed of a porous material with a dielectric constant less than 3.0 but greater than 2.0 (xerogels or acrogels) (col. 4, lines 44-62). This structure aids in eliminating gate-edge fringing field effect, which can adversely affect the ability of the gate conductor to couple to the channel and to the source/drain extensions and also degrade the control of charges in the channel by the gate stack, thereby degrading sub-threshold characteristics of the transistor (col. 2, lines 15-32).

It would have been obvious to one of ordinary skill in the art, at the time the invention was made, to modify the method shown in Yu (115), forming the spacers of a porous dielectric material, with a dielectric constant (k) is less than 3.85, as taught by Yu (748), with the motivation that Yu teaches the elimination gate-edge fringing field effect, which can adversely affect the ability of the gate conductor to couple to the channel and to the source/drain extensions and also degrade the control of charges in the channel by the gate stack, thereby degrading sub-threshold characteristics of the transistor.

Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yu (U.S. Patent No. 6,297,115, dated 10/2/2001) in view of Yu (U.S. Patent No. 6,194,748, dated: 2/27/2001) as applied to claim 10 above, and further in view of Mandelman et al. (U.S. Patent No. 6,429,477 dated 8/6/2002).

Yu (115) as modified by Yu (748) shows the method substantially as claimed and as described in the preceding paragraph.

Yu (115) as modified by Yu (748) lacks anticipation only in not explicitly teaching that: 1) the thin layer has a thickness of less than 5 nm (claim 20).

Mandelman shows a transistor device that incorporates thin layers. Thin layer (230) is formed over sidewall spacer (228) (col. 5, lines 24-32); the thin silicon oxide layer is formed between the thicknesses of 2nm-5nm (col. 5, lines 42-54). This allows the transistor to be formed with self-aligned body contact this minimizes tolerances need while minimizing process complexity.

It would have been obvious to one of ordinary skill in the art, at the time the invention was made, to modify the method shown in Yu (115) as modified by Yu (748), by forming the thin layer with a thickness of less than 5 nm, as taught by Mandelman, with the motivation that Mandelman teaches that the thin layer allows the transistor to be formed with self-aligned body contact this minimizes tolerances need while minimizing process complexity.

Traversing the Rejection(s)

The claims are amended herewith to traverse the rejection(s). Basically, the rejected claims are

canceled or amended to depend from allowable claims. A few new claims are added.

Twenty (10-29) claims were pending, of which five (10,11,12,14,17) were in independent form. Four claims are canceled herewith, and four claims are added. No excess claim fee is required.

Independent **claim 10** is canceled. Claim 10 was directed to:

depositing a dielectric material;
etching the dielectric material to form a spacer;
forming pores in the dielectric material; and
depositing a thin layer over the porous dielectric material.

In independent **claim 11**, the spacer is made porous by exposing the spacers to an oxygen plasma.

Dependent **claim 19** is directed to the thin layer comprises oxide and is amended to depend from claim 11.

Dependent **claim 20** is directed to the thin layer has a thickness of less than 5nm and is amended to depend from claim 11.

Dependent **claim 21** depends from 11 and is directed to the spacer comprises a Si-O-C-N type of low-k material.

Dependent **claim 24** is directed to the spacer has a reduced dielectric constant (k); and the reduced dielectric constant (k) is less than 3.85 and depends from claim 11.

Dependent **claim 27** is directed to the thin layer comprises a material selected from the group consisting of oxide, amorphous silicon and nitride and depends from claim 11.

In independent **claim 12**, the spacer comprises organic material; and the spacer is made porous by removing the organic material.

Dependent **claim 13** is directed to the spacer comprises a Si-O-C-N type of low-k material and is amended to depend from claim 12.

Dependent **claim 26** is directed to the spacer has a reduced dielectric constant (k); and the reduced dielectric constant (k) is less than 3.85 and is amended to depend from claim 12.

New dependent **claim 30** is similar to claim 27, and depends from claim 12.

New dependent **claim 31** is similar to claim 20, and depends from claim 12.

In independent **claim 14**, the pores are formed during the spacer etch, rather than during deposition of the dielectric material.

Dependent **claim 22** depends from claim 14 and is directed to the spacer comprises a Si-O-C-N type of low-k material

Dependent **claim 25** depends from claim 14 and is directed to the spacer has a reduced dielectric constant (k); and the reduced dielectric constant (k) is less than 3.85.

Dependent **claim 28** depends from claim 14 and is directed to the thin layer comprises a material selected from the group consisting of oxide, amorphous silicon and nitride.

In independent **claim 17**, the spacer has a reduced dielectric constant (k); and the reduced dielectric constant (k) is less than 7.0, but greater than 3.85.

Dependent **claim 23** depends from claim 17 and is directed to the spacer comprises a Si-O-C-N type of low-k material.

Dependent **claim 29** depends from claim 17 and is directed to the thin layer comprises a material selected from the group consisting of oxide, amorphous silicon and nitride.

New dependent **claim 32** depends from claim 17 and is directed to the thin layer has a thickness of less than 5nm.

New dependent **claim 33** is similar to claim 20, and depends from claim 14.

Conclusion

Applicant respectfully requests that a timely Notice of Allowance be issued in this case.

Respectfully submitted,

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